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Aquatermolisys of heavy crude oil in the presence of metal oxide nanoparticles

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Abstract

The effect of suspended nanoparticles of magnetite and hematite on thermal decomposition of heavy oil at a temperature of 360 ° C in a vapor medium at different pressures in the system was explained. The preferential destruction reactions were established concerning macromolecular components of the oil, which reduces its viscosity. The effect of zinc and aluminum oxides was shown as the additives initiating cracking of hydrocarbon bonds. The principles of change in the component composition of the conversion products were revealed as compared to the original crude oil. Conduction of the process in the presence of additives at a pressure of 11 MPa, thereby reducing the aromaticity of the final products to increase the yield of hydrocarbon oils, the formation of gaseous products. It is noticed, that reduce asphalt-resinous substances as a result of the conversion in the presence of additives. Built rheological curves of conversion products; their example shows the features of change viscosity-temperature characteristics.

Keywords

Component composition of crude oil, Heavy crude oil, Homogeneous catalysis, Iron oxides, Nanosized particles, Rheological curves